

## From No-Go to Go-Go Future Training Procedures for Elderly

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### Short Communication

The topic ‘*demographic change*’ is a widely discussed topic. When it comes to world demographics, two major trends can be observed [1]: Firstly, the aging and potentially shrinking regions (such as Europe or America) and secondly the regions where population is increasing (such as Africa). However, both trends provide a challenge for the health care system, in relation to preserving function, mobility and independency in everyday life. Health trends of the elderly population have received attention since the end of 1990 because of the rising costs of long-term care and medication [2]. It should be taken into account that the human body has two kinds of ages: chronological and biological. The chronological age describes the actual lifetime in years, while the biological age describes the state physical and mental function of the human individual. However, the chronological age is not relevant to said functions. Therefore, the focus has to be on the biological age rather than on the more commonly used chronological age.

The development of the biological-age and the performance-specific exercise concepts is essential to prevent disease, maintain function and extend independence in daily living in the elderly population [3] and should be based on the latest scientifically proven evidence. The following aspects regarding planning as well as maintaining individual exercise should be considered: Firstly, the current physical functional capacity (e.g. strength) should be assessed, and secondly, structures (e.g. muscles) which are responsible for this condition should be evaluated. Due to the different forms of physical and mental functions of biological age in any elderly individual, the following classification is recommended [3,4]: 1. Go-Go: independent people, 2. Slow-Go: needy people with slight handicap, and 3. No-Go: people in need of care with severe functional disability (Figure 1).

Because of low physical capacity, movement therapy and exercises in “No-Go” should be conducted in a short training session (e.g. < 20 minutes) which should include specific components of balance, strength and cognition. Whole-body vibration (WBV) and Exergames are possibilities for innovative training programs for “No-Go” [5]. Three types of WBV devices exist: sinusoidal side-alternating WBV, sinusoidal vertical WBV (SV-WBV) and stochastic resonance WBV (SR-WBV) [4,6].

In contrast to SS-WBV and SV-WBV, the force impacts of SR-WBV are not predictable, and the body is constantly challenged to adapt to external loads and muscle reactions [7]. This kind of stimulus triggering muscle spindles improves the functionality of the nerve-muscle system [8]. WBV is known to improve muscle strength and physical performance capacity [7].

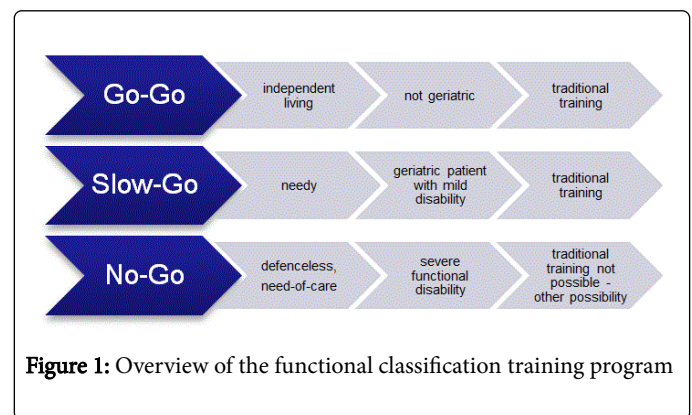


Figure 1: Overview of the functional classification training program

A huge variety of video games training sensorimotor and balance aspects is available, the so called Exergames, which show an increase in physical performance capacity [9]. SR-WBV and Exergames could be used as combined sensorimotor training in No-Go elderly in the context of skilling-up, since they might not be prepared for an exposure to the load and duration of traditional training sessions. “Slow-Go” and “Go-Go” elderly individuals can immediately participate in traditional training regimes such as hypertrophy, power or endurance training.

In addition, suitable assessment tools should be used to document the current physical function capacity and treatment process. The Short Physical Performance Battery test (SPPB) is suitable. It is used as a predictive tool for possible mobility disability and self-rated health [10] and may support the monitoring of functional performance in elderly individuals. The SPPB includes tests of balance, chair rise and gait speed. Measures can be used to estimate the risk of hospitalization and a decline in health and function in clinical populations of elderly individuals.

Based on the systematic application of the aforementioned procedures, future practice and research should evaluate the outcome of functional capacity training regimens in elderly.

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